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Application No.: 10/081,594

Docket No.: M4065.0726/P726  
(PATENT)



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:  
Terry L. Gilton

Application No.: 10/081,594

Group Art Unit: 2818

Filed: February 20, 2002

Examiner: Connie C. Yoh

For: PROGRAMMABLE RESISTANCE MEMORY  
CELL WITH MULTIPLE STATES

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**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
Washington, DC 20231

Dear Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the documents listed on the attached PTO/SB/08. It is respectfully requested that the subject matter of the documents be expressly considered during the prosecution of this application and that the documents be made of record therein and appear among the "References Cited" on any patent to issue from this application. A copy of each document is attached.

**This Information Disclosure Statement is filed before the mailing date of a first Office Action on the merits as far as is known to the undersigned.**

A brief explanation of relevance of the non-patent documents listed on form PTO/SB/08 is provided and attached hereto as Appendix A. The brief explanation provided for each document is not tantamount to an admission that a document is "material" or that it qualifies as prior art. The Examiner is respectfully requested to utilize Appendix A only as a tool by which to better categorize the documents for substantive use in examining the claims of the application.

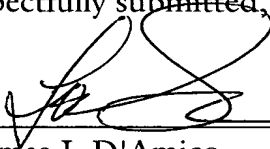
Documents discussed in Appendix A marked with an asterisk (\*) are indicated to be potentially more relevant than others. Such marking is provided only to assist the Examiner; however, the Examiner is requested to thoroughly review all documents cited herein.

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. § 1.56(a) exists. It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider and cite the listed documents.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1073, under Order No. M4065.0726/P726. A duplicate copy of this paper is enclosed.

Dated: May 21, 2003

Respectfully submitted,

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## APPENDIX A

Japanese patent application publication No. 56126916A by Akira: this published application generally relates to, inter alia, diffusing selenium with high accuracy into a chalcogenide with silver by use of photoresist and thermal treatment.

\*Axon Technologies Corp., *Technology Description: Programmable Metallization Cell*: this believed publication generally relates to, inter alia, use of chalcogenides doped with metal much as silver or copper to create solid state switch with lower voltage requirement.

Helbert et al., SPIE Vol. 333 Submicron Lithography (1982): this publication generally relates to, inter alia, hybrid ultragraphic process using both electron beam and conventional optical exposure within the same device level with a photoresist.

Hilt, dissertation (1999): this publication generally relates to, inter alia, stability of chalcogenides such as  $\text{Ge}_x\text{Se}_{1-x}$  with Ag doping by photodissolution and thermal diffusion.

Hirose et al., Phys. Stat. Sol. (1980): this publication generally relates to, inter alia, switch and memory phenomena in amorphous  $\text{As}_2\text{S}_3$  with photo-doped Ag, including new mechanism, electrical reliability, rapid memory performance, thermal characteristics and durability

Holmquist et al., 62 J. Amer. Ceram. Soc., No. 3-4 (March-April 1979): this publication generally relates to, inter alia, reactions and diffusion of Ag in arsenic chalcogenide glass below the glass transition temperature, including solubility information and concentration dependence of Ag diffusion in these glasses.

Huggett et al., 42 Appl. Phys. Lett., No. 7 (April 1983): this publication generally relates to, inter alia, reactive sputter etching to develop silver-sensitized  $\text{Ge}_x\text{Se}_{1-x}$  photoresist.

Kawaguchi et al., 164-166 J. Non-Cryst. Solids (1993): this publication generally relates to, inter alia, deposition mechanism of Ag particles on Ag-rich Ag-As-S glass from a view-point of electrical effects.

\*Kolobov and Elliott, Advances in Physics (1991): this publication generally relates to, inter alia, photodoping (photodiffusion/photodissolution) of amorphous chalcogenides by metals, particularly silver.

\*Kozicki et al., Superlattices and Microstructures, 27 (2000): this publication generally relates to, inter alia, solid solutions of metals (e.g., silver) in arsenic trisulfide and their physical and electrical characteristics.

\*Kozicki et al., Microelectronic Engineering, vol. 63/1-3 (2002): this publication generally relates to, inter alia, the photodiffusion of Ag into germanium selenide glass films, the amount of Ag that can be incorporated in to such a film by photodiffusion, and the characteristics of the resulting doped films.

\*Kozicki et al., Proceedings of the 1999 Symposium on Solid State Ionic Devices (1999): this publication generally relates to, inter alia, physical and electrical characteristics of metal doped chalcogenide films (photodoped  $\text{Ag}_4\text{As}_2\text{S}_3$ ) between electrodes, useful in memories, configurable connections, and self-repairing interconnections.

\*Kozicki and Mitkova, Proceedings of the XIX International Congress on Glass, Society for Glass Technology (2001): this publication generally relates to, inter alia, the physical effects of introduction of Ag into chalcogenide glasses, where introduction is by photodiffusion.

McHardy et al., 20 J. Phys. C.: Solid State Phys. (1987): this publication generally relates to, inter alia, sensitivity and high resolution of metals in amorphous chalcogenides by electron and UV radiation.

Owen et al., Nanostructure Physics and Fabrication (1989): this publication generally relates to, inter alia, photo-induced structural or physico-chemical changes of amorphous chalcogenides when exposed to light/irradiation, affecting chemical solubility.

Shimizu et al., 46 B. Chem Soc. Japan, No. 12 (1973): this publication generally relates to, inter alia, electric conductivity increase by increasing Ag-photodoping of chalcogenide glass.